Appendix D - Purpose and Need for Action

The Chequamegon-Nicolet National Forest is tasked with implementing land management activities consistent with direction in the Forest Plan and addressing major gaps between desired future conditions and the current conditions in the project area.

In early 2017, an interdisciplinary team comprised of District and Forest resource specialists began assessing the existing vegetative conditions and management options within the Fourmile project area. The purpose and need for this project was developed when these resource specialists identified the specific gaps between desired conditions (outlined in the Forest Plan) and ground conditions (existing conditions) within the project area. In addition, a detailed roads analysis was completed in order to determine long-term access needs.

The proposed action (Alternative 2) was derived from these efforts, reflecting how the Forest Service could best close the gap between the desired and existing conditions, while meeting project objectives and eliminating or minimizing potential resource impacts. Alternative 2 actions or activities are described in Chapter 2.

Vegetation management was identified as the main focus of this project. All of the vegetation needs identified by resource specialists are tied to Goal 1.4 of the Forest Plan: provide terrestrial ecosystems in healthy, diverse, and productive conditions that support the diversity of plant and animal communities and tree species, and have a high likelihood of supporting the viability of native and desired non-native vertebrates and vascular plants well distributed in their ranges within the planning area over time (Forest Plan at 1-3). The proposed project also includes transportation management, wildfire and fuels management, and management of hunter hiking trails and wildlife openings.

Through examination of the existing conditions in the project area, five major purposes and nine needs for action have been identified based upon Forest Plan goals and objectives and other Forest Service direction. The specific purpose and needs for each area of focus are described below.

Purpose A. Maintain or restore vegetation communities to their desired conditions in Management Areas (MA) 2A, 2B, 4A, 4B, and 8A (Forest Plan Objective 1.4a)

The need for action focuses on locations within MAs 2A, 2B, 4A, 4B, and 8A in which active management would aid in achieving or maintaining desired conditions. Based upon the Forest Plan desired future conditions for these management areas, nine needs were identified for the Fourmile project area.

The following paragraphs identify the corresponding Forest Plan goals, guidelines, and desired future conditions (DFCs) related to an identified need; the existing condition of the project area; and the reason why there is a need to change the existing conditions. The specific needs are a measure of expected benefits that quantitatively or qualitatively indicate how well the purpose and need would be met by taking action.

Need 1. Reduce stocking levels in overstocked forested stands within Management Area 2A, 2B, 4A, 4B, and 8A.

All tree species in the project area have some acres that are overstocked when considering the overstocked definitions in the Forest Plan (Forest Plan at 2-4 through 2-13, FF-1, and FF-2). Almost 13,000 acres in the Fourmile project area are considered overstocked. A breakdown of what species this includes is displayed below.

Table D-1. Existing Overstocked Acres Compared to Total Acres in the Project Area for Selected Species (#s rounded to nearest ten)		
Species	**Total Acres**	**Overstocked Acres**
Aspen	3,350	970
Balsam Fir	660	300
Eastern White Pine	1,040	740
Northern Hardwood	10,410	6,980
Oak	410	100
Paper Birch	470	440
Red Pine	3,830	3,400
Spruce	440	190

These crowded conditions typically result in reduced growth and increased occurrence of insect and disease outbreaks. A need of the project is to reduce the number of trees per acre (i.e. the stocking level) to increase the availability of light and nutrients for the remaining trees. This will increase tree vigor and growth, reducing the occurrence of insect and disease outbreaks and mortality.

The Forest Plan recommends that managed even-aged and uneven-aged northern hardwood stand densities be maintained according to standard stocking charts and northern hardwood literature (Forest Plan at 2-7). The Forest Plan also emphasizes stand density management for managing vegetation for resistance to pest outbreaks (Forest Plan at 2-26). Therefore, there is a need to reduce stand densities in accordance with Forest Plan direction.

Need 2. Maintain or move northern hardwood stands toward an uneven-aged condition consistent with Forest Plan direction while maintaining or enhancing within stand species diversity.

The majority of the hardwood stands in the Fourmile project area are being managed for an uneven-aged objective. The Forest Plan gives guidance to manage uneven-aged, northern hardwood stands with at least 3 distinct age classes and for specific tree diameter ranges (Forest Plan at 2-4 through 2-8). The Forest Plan at 3-9 states that harvest activities should take place on a 10 to 20 year interval.

Currently, there are about 6,982 acres that have been identified as overstocked, in need of improved stand structure, and suitable for timber production. Approximately 67 percent of the northern hardwood stands in the project area are in an even-aged or two-aged condition. Some have been selectively cut in the past and have two distinct age classes, but only a quarter of them have three distinct age classes (Forest Plan at 2-7). Individual tree selection harvests in project area stands would maintain those stands which are currently uneven-aged and move the remaining hardwood stands towards the desired future condition of uneven-aged by adding a second or third distinct age class.

Converting forests to an uneven-aged condition would create more resilient stands that would be less likely to experience insect and disease outbreaks. This conversion reduces the probability of insect and disease outbreaks because the higher tree diversity within the stands would make it harder for insects or diseases to kill off an entire stand with multiple species of trees, knowing that specific insects or diseases usually select one specific tree species to attack. Therefore, there is a need to maintain or move northern hardwood stands

in the project area toward uneven-aged conditions and maintain or improve species diversity.

Need 3. Improve age class distribution, moving stands toward Forest Plan desired conditions.

Many age class and multiple dominant species in the Fourmile project area are concentrated in the older age classes (see Table D-2 below for more details). When there are too many trees in the older age classes, there tends to be a reduction of that species in the area, a reduction of insect and disease resiliency, and tree growth starts to stagnate or dramatically slow. Also, with many older trees present on the landscape, there is a shortage of younger trees regenerating, reducing tree recruitment when the older trees die.

Currently, in the Fourmile project area the aspen, paper birch, and pine are overabundant in the older age groups, with limited representation in the youngest age groups. There is a need to improve the age class distributions to provide long-term sustainable levels of the different age classes. One purpose of this project is to improve the age class distributions in the project area by removing older and/or stagnated stands in order to regenerate younger age classes. The tables below display the existing and desired condition age class distribution.

Table D-2. Desired and Existing Conditions for the Fourmile Project Area

Aspen Age Class	Desired Condition	Existing Condition		Balsam Fir Age class	Desired Condition	Existing Condition
0-10	15-25%	4%		0-10	15-25%	0%
11-30	15-25%	2%		11-30	35-45%	15%
31-45	45-55%	63%		31-45	25-35%	30%
46+	5-15%	32%		46+	5-15%	55%
Jack Pine	**Desired condition**	**Existing Condition**		**Paper Birch**	**Desired Condition**	**Existing condition**
0-10	10-20%	0%		0-20	20-30%	0%
11-30	30-40%	46%		21-40	20-30%	2%
31-50	30-40%	17%		41-60	20-30%	0%
51+	15-25%	37%		61+	20-30%	98%
Red Pine	**Desired Condition**	**Existing Condition**		**White Spruce**	**Desired condition**	**Existing Condition**
0-20	10-20%	1%		0-20	15-25%	0%
21-60	25-35%	32%		21-60	30-50%	51%
61-100	25-35%	52%		61-80	15-25%	24%
100+	10-20%	14%		81+	20-30%	25%
White Pine	**Desired Condition**	**Existing condition**		**Hardwood**	**Desired condition**	**existing condition**
0-20	10-20%	0%		0-20	10-20%	0%
21-60	20-30%	12%		21-60	25-35%	4%
61-120	30-50%	68%		61-100	25-35%	49%
120+	25-35%	19%		101+	10-20%	14%
Red Oak	**Desired Condition**	**Existing Condition**		Uneven Aged		33%

0-19	15-25%	0%
20-59	30-50%	1%
60-79	15-25%	11%
80+	20-30%	88%

Need 4. Improve tree species composition to more closely reflect Forest Plan desired conditions,

Having a diverse forest on a landscape basis is important to maintain forest health and habitat for a variety of species. The Forest Plan outlines the desired species composition for most Management Areas. The existing and desired conditions for species compositions are displayed below.

Table D-3. Existing Species Composition Compared to Forest Plan Desired Conditions

	MA 2A		MA 2B		MA 4A		MA 4B		MA 8A	MA 8D
Forest Type	**Existing**	**Desired**	**Existing**	**Desired**	**Existing**	**Desired**	**Existing**	**Desired**	**Existing**	**Existing**
Aspen	12%	5-20%	8%	0-10%	27%	10-30%	18%	0-7%	8%	14%
Balsam Fir	3%	0-3%	4%	0-3%	3%	0-3%	3%	0-3%	1%	0%
Paper Birch	1%	0-5%	5%	0-2%	1%	0-5%	1%	0-5%	0%	46%
Jack Pine	8%	0-2%	0%	0-2%	1%	0-35%	2%	3-6%	4%	0%
Red and White Pine	26%	5-20%	7%	0-10%	29%	10-50%	36%	45-70%	1%	10%
Northern Hardwoods	43%	40-70%	72%	50-80%	27%	0-25%	29%	0-10%	77%	29%
Oak	0%	0-5%	0%	0-3%	0%	0-25%	7%	10-25%	0%	0%

Numbers reflect upland forest types

Need 5. Maintain or enhance existing forest research studies (e.g. continue research studies in the Argonne Experimental Forest or develop new research studies) to address vegetation concerns,

Forests and forest dynamics change over time, either due to environmental factors or manmade changes, which stresses the need to initiate, maintain, or enhance local research to better understand these changes. Experimental Forests allow research like this to be implemented in order to better inform natural resources managers' actions with best available science. Currently, there are three experiments going on within the Argonne Experimental Forest that need action and one study occurring on the Eagle River-Florence Ranger District that does as well.

Purpose B. Contribute toward satisfying demand for wood products and special forest products through environmentally responsible harvest on National Forest System lands (Forest Plan Objective 2.5)

Need 6. Utilize commercial harvest as the preferred tool to achieve project objectives, contributing to the demand for forest products.

Forest Plan at 1-6, Goal 2.5 states "Contribute toward satisfying demand for wood products and special forest products through environmentally responsible harvest on National Forest System lands". The long-term objective for the suitable forestland within the project area is to provide a sustainable flow of wood products while meeting other

Forest Plan objectives. The acres identified for treatment in the project area belong to the suitable land base, and commercial timber harvests can be used to meet most of the habitat and landscape needs identified. Treatment activities to meet the vegetation objectives are proposed to be accomplished through the sale of marketable wood products. Therefore, the purpose and need for this project also includes offering wood products to contribute to this demand for wood products.

Purpose C. Need to provide a safe and effective road system (Forest Plan Goal 3.1)

Need 7. Build and maintain safe, efficient, and effective infrastructure that supports public and administrative uses of National Forest System lands.

The Forest Plan provides guidance for a desired transportation system. The Forest Plan desired condition for total road density is to progress towards or maintain a road density of 3.0 or fewer miles per square mile (Forest Goal 3.1).

A transportation analysis was conducted for the Fourmile project area. Its purpose is threefold: 1) to determine if the existing road density levels within the project area are within the Forest Plan desired conditions; 2) to identify the risks (to resources) and values (for administrative and/or public access) associated with the roads currently recorded in our road database; and 3) to determine if additional roads are needed to access stands proposed for treatment or activities.

Based on the information in the analysis, most current total and open road densities are beyond the desired level of the Forest Plan objectives. Future transportation actions would be based on moving road densities toward Forest Plan objectives, balancing the risk to the surrounding resources, and the road values for administrative and/or public use.

The roads that would be determined to be of low to moderate risk to resources and moderate to high value would be proposed to be maintained at their current level. Other roads that would be determined to be of high to moderate risk to resources and of moderate to high value for administrative and/or public use would be proposed for relocation, reconstruction, and/or closure to the public to provide sustainable access and decreased costs for maintenance. Roads that would be found to have high risk and low value would be proposed for decommissioning. Typically a number of the roads proposed for decommissioning were already revegetated on the ground and have yet to be removed from our roads database or Motor Vehicle Use Map. Most of the remaining roads identified for decommissioning are unauthorized roads and are not open to motorized use.

In addition to road actions in relation to Fourmile project activities, there is a need to update the Chequamegon-Nicolet Motorized Vehicle Use Map (MVUM). In other words, we would like to update the gap between the existing road conditions on the ground and what the MVUM displays on the map.

Purpose D. Increase public safety related to wildfire potential (Forest Plan Objective 2.8c)

Need 8. Reduce hazardous fuels within communities at risk.

The Forest Plan gives general guidance concerning fire and fuels management on the Chequamegon-Nicolet National Forest. Objective 2.8b states that the Forest Service will "[e]xpedite safe extinguishments of wildfires by the use of ground and/or air resources." Objective 2.8c states that the Forest Service will "reduce hazardous fuels within communities at risk, in cooperation with local, federal, and State agencies." Objective 2.8d states that the Forest Service will apply "fire management as part of natural ecological disturbance regimes."

Wildfires, due to accumulations of hazardous fuels, are of most concern in the wildland-urban interface where human life and property are immediately threatened. Since pine ecosystems are the most fire prone in northern Wisconsin, the Fourmile project targets fuels reduction in upland conifers with pine plantations that have timber activities proposed.

Back in the early 1930s and 1940s, many red pine plantations across Wisconsin were created by the Civilian Conservation Corp. These plantations were necessary to allow stands to have forest regeneration after the region was completely cutover closer to the 1900s. These actions also included successful fire suppression, altering the landscape from its historical condition. Most of the area was historically accustomed to multiple stand replacing fires within a tree's lifetime. Without this common occurrence of fire, the soils, tree species composition, and understory vegetation has been drastically altered. Many stands now have thick layers of hazelnut in the understory instead of naturally regenerating tree species and blueberry. There is a need in the Management Area 4B, which includes these fire suppressed areas, to reduce the artificially planted trees and bring back multiple controlled burns to encourage the area to return to its historical vegetation and soil conditions.

In the Fourmile project area, opportunities exist to remove understory vegetation in the wildland urban interface in conjunction with forest that has lots of woody debris (e.g. red pine plantation). Strategically located ladder fuel treatments within the Wildland-Urban Interfaces (WUIs) are proposed to meet two objectives: 1) create zones of defensible space for fire suppression; and 2) help prevent surface fires from transitioning to crown fires. Meeting these objectives contributes to the overall goal of reducing anticipated fire behavior.

Ultimately, a need for the Fourmile project area is to mitigate potential fire behavior and create a zone of defensible space with moderate surface fire behavior along property boundaries, minimizing the probability of wildfires going into the crowns of trees and becoming uncontrollable.

Purpose E. Maintain or enhance the diversity and quality of recreation experiences within acceptable limits of change to ecosystem stability and condition (Forest Plan Goal 2.1)

Need 9. Maintain the Scott Creek, Kimball Creek, and Nine-Mile hunter hiking trail (HHT) and associated wildlife openings.

There is a need to maintain project area hunter hiking trails (HHT) and associated wildlife openings from encroaching vegetation. The Forest Plan specifies one of the themes for MA 2, which states non-motorized trail uses will be a primary recreation activity. To ensure this opportunity is available, the Scott Creek, Kimball Creek, and Nine-Mile HHT system should be maintained in the Fourmile project area, including their associated wildlife openings. These trails are primarily used by deer and grouse hunters in the fall, but also by hikers, bird watchers, and other outdoor recreationists during spring and summer. Currently, brush and early successional trees (balsam fir, aspen, birch, etc.) are starting to hinder passage on these trails, restricting recreational opportunities in this area.